

What is claimed is:

- 1 1. A genetically engineered plant, or portion thereof, comprising a recombinant nucleic
2 acid sequence that encodes a protein involved in Vitamin C biosynthesis.
- 1 2. The genetically engineered plant of claim 1 wherein said plant, or portion thereof, is a
2 dicot.
- 1 3. The genetically engineered plant of claim 1 wherein said genetically engineered plant
2 is *Arabidopsis thaliana*.
- 1 4. The genetically engineered plant, or portion thereof, of claim 1 wherein said nucleic
2 acid comprises a polynucleotide that encodes GDP-mannose pyrophosphorylase.
- 1 5. The genetically engineered plant of claim 1 wherein said genetically engineered plant,
2 or portion thereof, is capable of overexpressing said recombinant nucleic acid.
- 1 6. The genetically engineered plant of claim 1 wherein said genetically engineered plant,
2 or portion thereof, is capable of producing increased levels of Vitamin C.
- 1 7. The genetically engineered plant of claim 1 wherein said genetically engineered plant,
2 or portion thereof, has increased resistance to environmental stress compared to a
3 plant of the same species without said recombinant nucleic acid wherein said
4 environmental stress is selected from the group consisting of:
 - 5 a) drought;
 - 6 b) cold;
 - 7 c) UV radiation;
 - 8 d) air pollution;
 - 9 e) salts;
 - 10 f) heavy metals; and

11 g) reactive oxygen species.

1 8. The genetically engineered plant of claim 1 wherein said genetically engineered plant,
2 or portion thereof, is edible.

1 9. A genetically engineered plant, or portion thereof, comprising a recombinant nucleic
2 acid that encodes GDP-mannose pyrophosphorylase.

1 10. The genetically engineered plant of claim 9 wherein said genetically engineered plant,
2 or portion thereof, is a dicot.

1 11. The genetically engineered plant of claim 9 wherein said genetically engineered plant
2 is *Arabidopsis thaliana*.

1 12. The genetically engineered plant of claim 9 wherein said genetically engineered plant,
2 or portion thereof, is capable of overexpressing said recombinant nucleic acid.

1 13. The genetically engineered plant of claim 9 wherein said genetically engineered plant,
2 or portion thereof, is capable of producing increased levels of Vitamin C.

1 14. The genetically engineered plant of claim 9 wherein said genetically engineered plant,
2 or portion thereof, has increased resistance to environmental stress compared to a
3 plant of the same species without said recombinant nucleic acid wherein said
4 environmental stress is selected from the group consisting of:

5 a) drought;

6 b) cold;

7 c) UV radiation;

8 d) air pollution;

9 e) salts;

10 f) heavy metals; and

11 g) reactive oxygen species.

1 15. The genetically engineered plant of claim 9 wherein said genetically engineered plant,
2 or portion thereof, is edible.

1 16. A method of increasing the endogenous level of Vitamin C produced in a plant, or
2 portion thereof, comprising overexpression of an enzyme crucial to Vitamin C
3 biosynthesis.

1 17. The method of claim 16 wherein said enzyme is GDP-mannose pyrophosphorylase.

1 18. The method of claim 16 wherein said plant, or portion thereof, is a dicot.

1 19. The method of claim 16 wherein said plant is *Arabidopsis thaliana*.

1 20. The method of claim 16 wherein said plant, or portion thereof, comprises increased
2 antioxidation capacity.

1 21. The method of claim 16 wherein said plant, or portion thereof, has increased resistance
2 to environmental stress compared to a plant of the same species without said
3 recombinant nucleic acid wherein said environmental stress is selected from the
4 group consisting of:

5 a) drought;

6 b) cold;

7 c) UV radiation;

8 d) air pollution

9 e) salts;

10 f) heavy metals; and

11 g) reactive oxygen species.

1 22. The method of claim 16 wherein said method produces a plant, or portion thereof,
2 which is edible.

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